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POINT SOURCE EMISSION INVENTORY FOR CALIFORNIA (EXCLUDING THE COUNTY OF LOS ANGELES)

Arnold Stein

Pacific Environmental Services, Incorporated

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Results of the emissions inventory for California excluding Los Angeles County are presented. Point source air pollutant emissions from those sources emitting more than 100 tons per year were quantified. The emissions data were reported on National Emissions Data System Forms.

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POINT SOURCE EMISSION INVENTORY FOR CALIFORNIA (EXCLUDING THE COUNTY OF LOS ANGELES)

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POINT SOURCE EMISSIONS INVENTORY FOR THE STATE OF CALIFORNIA (EXCLUDING THE COUNTY OF LOS ANGELES)

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Arnold Stein
Project Manager

ABSTRACT

The results of the emissions inventory for the State of California, excluding the County of Los Angeles, are presented. Emissions of air contaminants from point sources discharging more than one hundred (100) tons per year of either particulate matter, sulfur dioxide, hydrocarbons, carbon monoxide, or nitrogen oxides were quantified. The emissions data were assembled in a suitable format for use in completing the National Emissions Data Systems forms and presented in computer readout form.

SECTION I: INTRODUCTION

Pacific Environmental Services (PES) was awarded a task order under EPA contract #68-02-1004, (Task Order No. 1), to update and complete the emissions inventory for the State of California through calendar year 1972, excluding Los Angeles County. Emissions data for point sources exceeding one hundred (100) tons per year (TPY) of particulate matter, sulfur dioxide, nitrogen oxides, hydrocarbons, and carbon monoxide were collected and encoded on the National Emissions Data System (NEDS) forms.

These data represent the best available information from the California Air Resources Board (ARB) and local Air Pollution Control Districts (APCD).

SECTION II: STATEMENT OF PURPOSE

The National Air Data Branch (NADB) of EPA recognized that the inventory of emissions of the five primary air contaminants for the State of California was incomplete and that a sizeable number of source entries contained questionable data. To remedy this situation, a project to update and upgrade the emission inventory of 1969-1971 for the State, excluding the County of Los Angeles, was initiated. The principle objective of the program was to secure an inventory as defined by the National Emissions Data System, of all sources emitting in excess of 100 TPY of any of the aforementioned contaminants. This was to be accomplished by the collection of emissions values and engineering parameters of processes and equipment from various air pollution agencies throughout the State and encoding the information on NEDS forms.

SECTION III: GENERAL PROCEDURES

The guidelines employed for the implementation of this project

were received by PES during the initial meeting held at EPA Region IX headquarters in April, 1973. The portion of the inventory to be evaluated included point sources discharging more than one hundred (100) tons per year of any one of the five primary pollutants. The emissions estimated from the earlier survey covered the period of 1969 through 1971.

As an aid in determining the overall scope of the problem, three reports were generated from a tape of the earlier survey using PES proprietary software. One report contained the overall emissions survey data, the second reported the sources that emit more than one hundred (100) tons per year of any one of the primary pollutants, and the third reported sources with incomplete data. These reports provided a quick reference for field and office work as well as a ready follow up file.

In order to systematically compile the emissions estimates and engineering details for the inventory, the ARB agreed to a procedure that would avoid duplication of effort. It required the ARB to make available records resulting from their assistance to local agencies, encouraged the larger Districts to deal directly with PES and for PES to assist the Districts and the ARB whenever necessary to complete a specified inventory. As a result of these activities the data were collected in the following manner:

1) ARB collected data and forwarded the completed reports to PES: this covered 34 county agencies.

2) ARB and local agencies collected and developed data on a cooperative basis and forwarded completed copies to PES: this covered 13 county agencies.

3) Local agencies completed their own data and forwarded copies to PES. This covered 7 county agencies.

4) PES collected data from the local agencies and completed the NEDS encoding for 5 county agencies.

5) A fifth course of action became necessary due to lack of cooperation from the Riverside County APCD. The Enforcement Division of EPA Region IX surveyed industrial installations by sending OMB form #158-R75 to the management of these companies and forwarding the data to PES.

In order to expedite the flow of information, some agencies were contacted by phone. All estimates were summarily reviewed for missing and obviously erroneous information and errors in calculations.

Encoding of the data followed the general instructions presented in the Revised Guide for Compiling a Comprehensive Emissions Inventory (APTD-1135) and in special memoranda received from NADB. New estimates received by PES were compared with the initial inventory to determine if the information was an update or if it represented sources not previously reported.

In the event of an update requirement the material was entered according to the required NEDS update procedures, which defined the methods for deletions, changes, and additions to existing information. These procedures had been outlined for PES during telephone conversations and written correspondence with NADB in May, 1973. If it was determined that the data were new, additional NEDS forms were completed. Special coding problems were discussed in telephone conversations and confirmed by mail.

Upon completion of encoding, the NEDS forms were checked against the original inventory printout. These quality control reviews were divided into three categories:

1) Check of cmission calculations

2) Check of Universal Transverse Mercator (UTM) coordinates

3) Check of the form for correct computer entries and overall accuracy.

The original forms were duplicated and mailed to NADB.

SECTION IV: ASSUMPTIONS

Essentially there were two types of assumptions made during the preparation of the inventory: A) General Assumptions and B) Technical Assumptions.

A) General Assumptions:

1) All information submitted was assumed to be valid. The estimates thus provided by the Districts and the ARB were spot-checked for internal consistency. Complete checks were made only on data sets where the random samples showed significant errors.

2) The local agency was assumed to know what information was required from a firm for satisfactory encoding of a NEDS form.

B) Technical Assumptions:

1) In cases where a common metering system is used to serve a number of pieces of equipment, the feed rate as well as the emissions from the devices were prorated based upon the size of the unit and hours of operation. For example, a cement plant with an input rate of 100,000 TPY from 4 kilns of equal size was prorated showing kilns #1 through 4 each operating at 25,000 TPY all with equal emissions rates. This was applied to other similar

operations where multiple pieces of equipment form a processing or production system.

2) In cases where the information provided showed two rates of fuel utilization from a boiler, based on either natural gas or fuel oil combustion, the larger of the two values was used in encoding.

3) In considering stack data where a range of values was given, the larger value was reported. For example, if a basic oxygen steel furnace had a stack velocity listed as 260,000 to 290,000 cfm, the rate of 290,000 cfm was used. If the stack exit temperature of a cement kiln ranged from 230° to 260°F the temperature of 260°F was reported. Also if no information was available to the contrary a source was considered to have its own stack.

4) When combining a process and the process fuel on one NEDS form, the process Source Classification Code (SCC) was assumed to be dominant. There are two exceptions to this procedure which are:

   a) In completing Card 4 on the NEDS form the emissions recorded are the total of each pollutant from a process plus the corresponding pollutant from the fuel for that process. For example, emissions from a cement kiln:

	Kiln	Fuel	Entered on Card 4
Particulates	400	10	410
Sulfur dioxide	0	0	0
Oxides of Nitrogen	800	0	800
Hydrocarbons	0	10	10
Carbon monoxide	5	0	5

5) When emission data were not provided, EPA emission factors were used. Emission factor documents supplied by EPA included:

   a) "Compilation of Air Pollutant Emission Factors - AP42", February 1972 - Received April 1973.

   b) Ibid - Second Edition April 1973 - Received July 1973.

   c) "NEDS Source Classification Code (SCC) Factor Report", December 1972 - Received June 1973.

   d) Computer printout showing additional SCC's and emission factors for cleaning solvents, surface coating operations, petroleum marketing operations - Received August 7, 1973.

   In general, the latest information from NADB was applied to arrive at emissions estimates. However, engineering judgement was used to determine which document was to be used based on knowledge of the process or operation. When there was a question which could not be settled in house, it was discussed with the Project Officer at NADB for resolution.

6) Processes which were designated as being in series and operations which integrated several processes were generally assumed to function as a single unit when process information was not clear. For example, primary, secondary and tertiary-crushing in a stone quarry were treated as one source.

7) Where information was incomplete and no additional data were forthcoming, assumptions were made to encode data based on engineering experience gained in the operation or observation of similar process and equipment.

For example, the operating temperature of a baghouse serving a grey iron cupola was not given. Based upon previous experience and the assumption that silicone glass bags are used in the control device a temperature estimate of 250°F was used.

SECTION V: PROBLEMS ENCOUNTERED

The availability of descriptive data and calculated or measured values necessary for the completion of the inventory forms presented the biggest problem in this project. Many business establishments do not maintain these data or lack the qualified personnel to search records and files to compile this information. Therefore it was necessary to use estimates and other empirical methods to arrive at valid estimates.

The need to rely upon the agencies to request supplementary data from the firms concerned, rather than for PES to contact them directly, significantly extended the time required to complete a set of forms where these data were missing.

In dealing directly with the APCD's, many calls and visits were necessary to complete the individual county inventories. Data received were often incomplete, would not stand up under routine engineering checks and occasionally contained sufficient arithmetical errors to warrant recalculating all of the estimates.

Riverside County APCD was completely uncooperative by failing to accept or to keep appointments for interviews or data transmittals. This county was finally surveyed by EPA Region IX Enforcement Division and the data thus received forwarded to PES for encoding. These data, however, were also found to be inaccurate and incomplete necessitating considerable additional recontact work, which is to be accomplished by EPA.

This survey would not have been possible without the support of local agencies and the ARB. Their cooperation and efforts were greatly appreciated. However, they did have some problems which contributed to a slowdown in data procurement. The small local agencies needed extensive help from the ARB or PES personnel to compile the raw data. In the case of the ARB the need to supply this kind of aid was an added burden for the already overloaded staff.

SECTION VI: RESULTS

At the completion of encoding, seven hundred-fifty-four (754) NEDS forms were filed based on reports covering 241 plants throughout the state of California excluding Los Angeles County. These forms were submitted to NADB and are the deliverable product of this project.

SECTION VII: FUTURE WORK

Task Order #3 of the Basic Ordering Agreement covering this effort will complete the inventory for the entire State, including Los Angeles County. It will also provide an inventory of sources between 25 TPY and 100 TPY, completion of the 100 TPY inventory and a machine readable data base from the Los Angeles County Air Pollution Control District's data processing system.